

Fig. 1

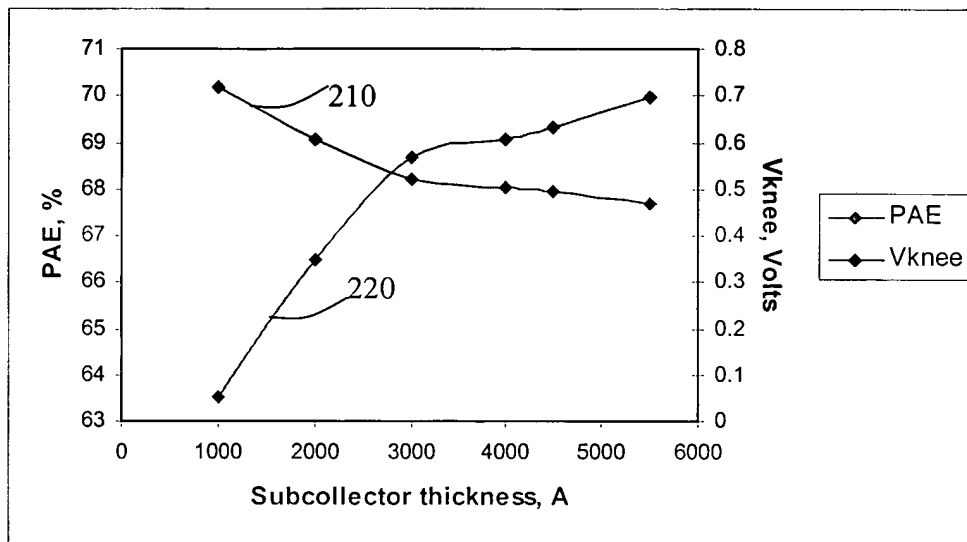


Fig. 2a

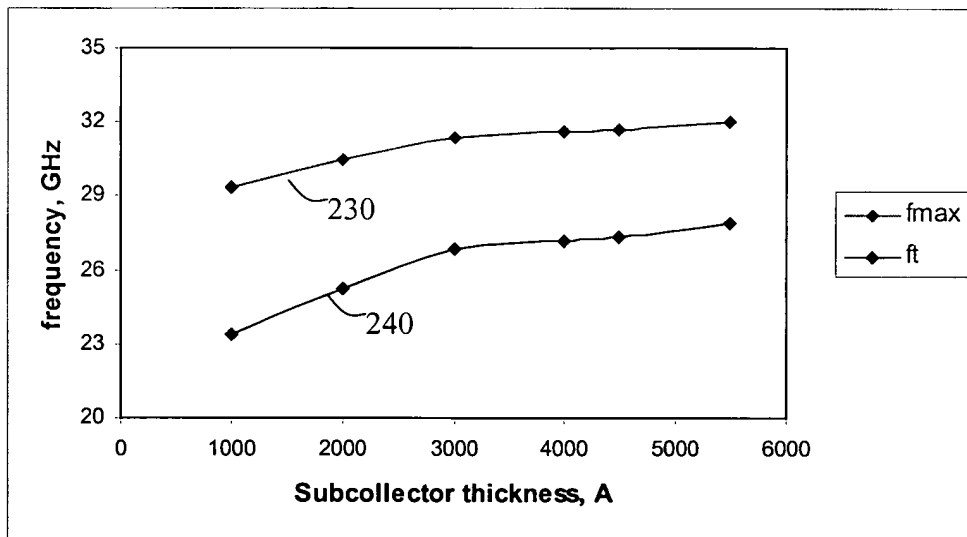


Fig. 2b

| Layer | Material | Doping Type | Doping Concentration | Thickness 1 nm = 10 Å | Al or In % |
|-------|----------|-------------|---------------------------|--------------------------|----------------------|
| 108 | InGaAs | Te doped N+ | $>1.0E19 \text{ cm}^{-3}$ | 400Å | 60 |
| | InGaAs | Te doped N+ | $>1.0E19 \text{ cm}^{-3}$ | 400Å | linear grade 0-60 |
| | GaAs | Si doped N+ | $>4.0E18 \text{ cm}^{-3}$ | 1200Å | 0 |
| 107 | InGaP | Si doped N+ | $3.0E17 \text{ cm}^{-3}$ | 500Å | lattice matched |
| 106 | GaAs | C doped P+ | $4.0E19 \text{ cm}^{-3}$ | 1100Å | 0 |
| 105 | GaAs | Si doped N | $1.5E16 \text{ cm}^{-3}$ | 7000Å | 0 |
| | GaAs | Si doped N | $4.0E16 \text{ cm}^{-3}$ | 3000Å | 0 |
| | GaAs | Si doped N+ | $>4.0E18 \text{ cm}^{-3}$ | 500Å | 0 |
| 124 | InGaP | Si doped N+ | $>1.0E18 \text{ cm}^{-3}$ | 200Å | lattice matched |
| 104 | GaAs | Si doped N+ | $>4.0E18 \text{ cm}^{-3}$ | 3500Å | 0 |
| 103 | InGaP | Si doped N+ | $>1.0E18 \text{ cm}^{-3}$ | 200Å | lattice matched |
| 122 | GaAs | Si doped N | $3.2E17 \text{ cm}^{-3}$ | 1200Å | 0 |
| | GaAs | Undoped | N/A | 500Å | 0 |
| 121 | AlGaAs | Undoped | N/A | 2500Å | 24 |
| | GaAs | Undoped | N/A | 750Å | 0 |

Fig. 3

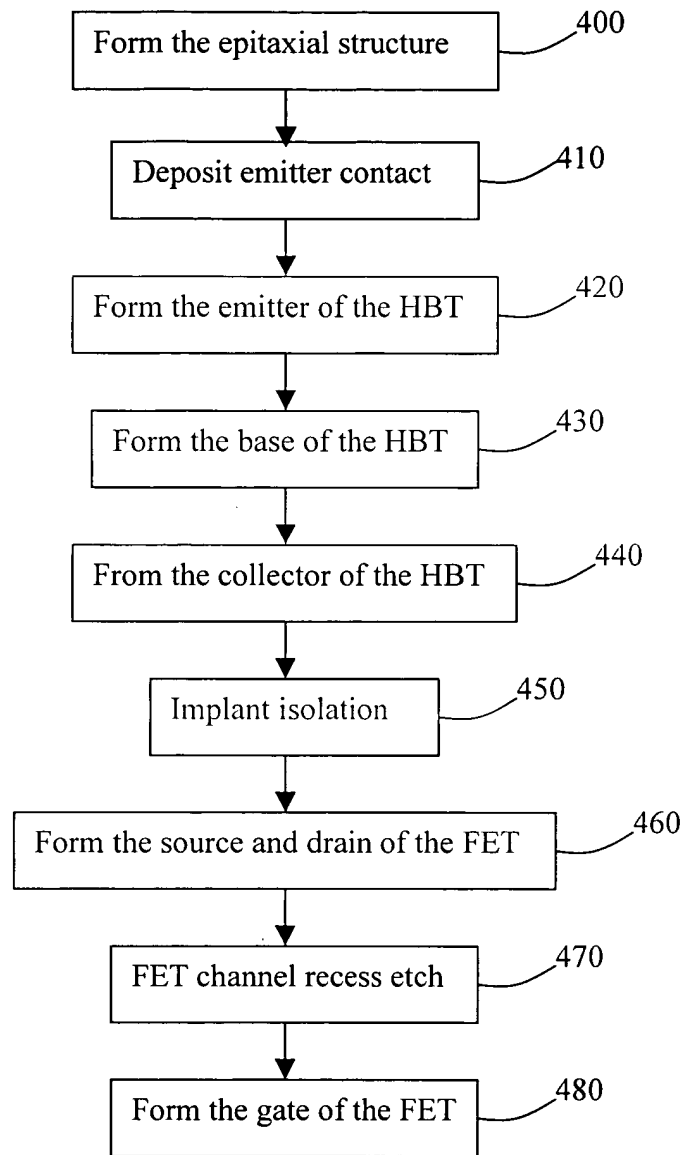


Fig. 4

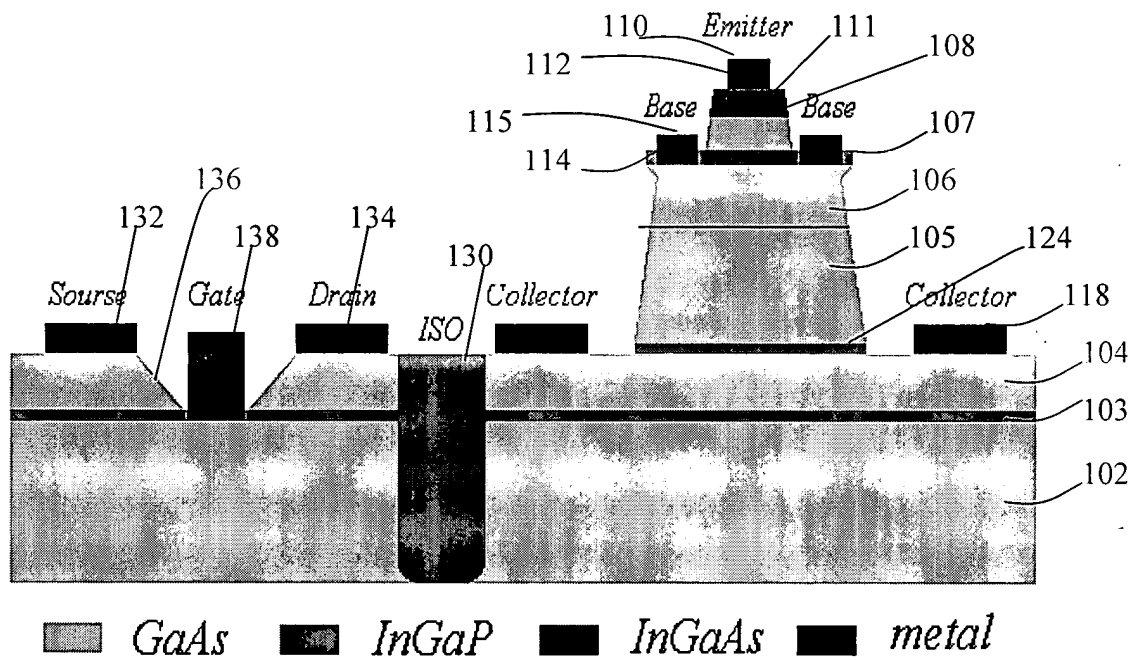


Fig. 5

| Parameter | HBT |
|-------------------------|---------------------------|
| DC gain | 85 |
| f_T , GHz | 30 @ 25kA/cm ² |
| f_{max} , GHz | 45 @ 25kA/cm ² |
| V _{knee} , V | 0.5 |
| V _{offset} , V | 0.1 |
| B _{vceo} , V | 15 |
| B _{vcbo} , V | 29.5 |
| B _{vbeo} , V | 8 |

Fig. 6

| Parameter | FET |
|---------------------------|------|
| V _p , Volts | -1.5 |
| R _{on} , Ohm mm | 3.5 |
| I _{dss} , mA/mm | 180 |
| BV _{GD} , Volts | 14 |
| I _{leak} , uA/mm | 2 |

Fig. 7